



AI impact on doctors-patients relationship: A review

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Abstract

The integration of Artificial Intelligence (AI) into healthcare systems is rapidly transforming the dynamics of the doctor-patient relationship. This review examines the multifaceted impact of AI technologies—such as clinical decision support systems, diagnostic tools, and virtual health assistants—on communication, trust, empathy, and decision-making processes between physicians and patients. While AI offers enhanced diagnostic accuracy, efficiency, and accessibility, it also raises concerns regarding depersonalization, reduced face-to-face interaction, and potential erosion of patient trust. This paper synthesizes current literature to explore both the positive and negative implications of AI, highlighting ethical considerations, the need for human oversight, and strategies for maintaining a compassionate, patient-centered care model in an increasingly digitized clinical environment. The review concludes by proposing a balanced framework that integrates AI capabilities while preserving the core human elements of the doctor-patient relationship.

Keywords: AI; Artificial intelligent in medicine; Patient- doctor relationship; AI role in patient-doctor relationship

1. Introduction

ChatGPT reached 100 million users within two months of its November 2022 launch, generating replies that resembled those of a human.¹ Numerous ideas for its possible uses in healthcare have surfaced on social media; examples include advising doctors on patient diagnosis and utilizing AI to write insurance company letters to outpatient clinics, saving time for the practicing physician. An AI-powered chatbot that checks symptoms can be used for self-triage and patient monitoring. AI can also be used to translate and interpret medical records or provide patient-friendly diagnosis⁽¹⁾

The relationship between a patient and a medical professional that aims to improve patient care is known as the doctor-patient relationship. Mutual trust and knowledge—the patient's confidence in the doctor's ability, the doctor's awareness of the patient's hopes, beliefs, and trust in the patient's truthful reporting of symptoms—physician empathy—the ability to understand the patient's experiences, worries, outlook, etc., and be able to compassionately communicate these to the patient—and loyalty—the patient's devotion to the doctor and the doctor's promise to never reject or disregard the patient's wishes.⁽²⁾

There are other aspects of modern medicine that seem to reduce direct doctor-patient engagement. Over the past few years, telemedicine has gained popularity, especially during the COVID pandemic. Despite the fact that patient and provider satisfaction is often good, the lack of direct physical evaluation may result in incorrect diagnoses. We and others have seen that the physical examination has lost some of its significance, even with in-person appointments.⁽²⁾

How might the doctor-patient relationship evolve with AI-driven medical care? Medicine presents a complex challenge, as patient care requires a melding of being analytical, nonanalytical, and compassionate in conveying the assessment and its significance to the patient. One cannot simply follow an algorithm and produce an answer. One must be able to

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interact and treat the patient and not just the disease process. With improvements in clinical care as eventually one hopes will develop with the increased utilization of AI, it is possible that more time might be available to enhance doctor-patient relationships. From freeing up time by assisting with transcription and documentation, added time might also reduce physician burnout and allow for a greater connection with the humanistic side of medicine. It can also serve to further democratize patient care by more rapidly providing patients with access to their information in a way a layperson could comprehend. Thus, if AI was utilized solely as an adjunct to the provider for improving medical diagnoses and outcomes, the overall effect in the foreseeable future seems positive. At the present time, however, general acceptance of AI-based medical care requires the fine tuning of AI algorithms that must be rigorously evaluated prior to acceptance. More work is also necessary to assess any potential negative aspects of AI. Liability for adverse outcomes would be complicated, as potential sources could stem from incorrect implementation or bias incorporated into underlying datasets. Additionally, the rapid access to information could prove to be a detriment. Patients may mistakenly interpret the potential for disease as a proven diagnosis which, in turn, would come with other psychological stresses.(2)

While it is true that telemedicine offers an alternative means of accessing health care delivery for the majority of outpatient activities pertaining to benign conditions or routine follow-ups (not to mention that the health care provider must convert a televisit to an in-person consultation when the conditions are met), it is also true that there are situations that necessitate an in-person visit. As a result, a number of concerns regarding the application of telemedicine and artificial intelligence that are frequently outside the original framework of the doctor-patient relationship have been addressed, identifying only external factors that authorize telemedicine performance (overcoming distance, limiting contagion, cost effectiveness) or obstacles (accessibility, requiring a comprehensive medical examination). In other words, the appropriate boundaries of the doctor-patient interaction are the only way to properly integrate telemedicine and artificial intelligence, particularly in delicate fields like oncological urology. This is not to claim that telemedicine isn't applicable in that industry; rather, it's to say that its viability cannot be ensured by organizational, financial, legal, or regulatory legitimacy.(3)

Artificial intelligence (AI) tools are increasingly being developed and deployed in the healthcare sector. Technologies which perform as well as, or better than humans already exist. High hopes are placed on AI technology to improve all aspects of healthcare including saving time. It is hoped that the time that AI can save can be used to improve doctor-patient relationships and making it more person-centred.(4)

nowadays, time is often insufficient for doctors to develop the type of empathetic and compassionate relationship with their patients that is necessary for person-centred care. Artificial intelligence (AI) is commonly cited as a potential solution to the problems faced by healthcare today, including addressing the aforementioned dissatisfaction surrounding the nature of the doctor-patient relationship. AI, is argued, has the potential to “give the gift of time” and could, therefore, allow the doctor and the patient to enter more meaningful discussions with respect to care. For example, tools that enable doctors to outsource certain tasks allow the doctor to spend this saved time on something else, and the hope is that this “will bring a new emphasis on the nurturing of the precious inter-human bond, based on trust, clinical presence, empathy and communication” (4)

The impact of AI on doctors is discussed in a Letter to the Editor piece published in the European Journal of Internal Medicine. According to the author, analyzing big data connected to healthcare holds the potential to accelerate medical advancements and reveal new insights, both of which can enhance clinical practice. Big data analysis now takes a lot of time for doctors and calls for advanced analytical tools. AI can help doctors analyze this type of large data and enhance the standard of patient care.(5)

Despite so much on the line, there is limited literature on PCP(primary care physician) views toward AI. Much of the research that does exist has taken place in a purely theoretical context exploring AI in general terms with physicians that did not have experience using AI-powered systems. We propose that more end-user engagement with clinicians discussing tangible, specific use cases of clinical AI is needed [6]. By highlighting specific AI use cases, we hope to elicit new concerns and attitudes that would remain hidden when discussing AI in general. Failure to engage end users in the design of AI-powered digital health tools leads to inefficient or unsuccessful integration of these tools into clinical workflow leading to added clinician burnout and even patient harm [7].

This literature review highlights the evolving role of the primary care physician. Once commonly viewed as the source of medical truth, physicians now coexist with “Dr. Google,” a digital repository of health information that empowers patients to engage proactively in their own care [8]. This change has had mixed effects on the doctor-patient relationship but can be positive if both parties engage in proper communication and shared-decision making. These positive effects also hinge on factors such as strong patient health information literacy and adequate doctor-patient

communication time [9]. Against this backdrop, The impending integration of AI into healthcare will similarly revolutionize the doctor- patient dynamic.

Much of the same research that was done to explore the impact of internet health information on the doctor- patient relationship needs to be repeated and expanded upon in the context of AI. Unlike static online information, interactive AI systems are poised to assume a more active role in shaping the interactions between patients and physicians. Ensuring a positive impact of AI on the doctor-patient relationship is essential to maintaining medicine's social contract with society [10]

AI's role in providing patients with information, be it accurate or misleading, could confound the physician- patient dynamic. Patients arriving with AI-informed information could complicate collaborative decision- making [11]. Possible consequences include rigid adherence to AI-driven advice without considering individual medical history or difficulties for physicians attempting to reconcile their expertise with AI suggestions. This not only risks eroding the PCP's role but also could reshape the doctor-patient relationship into a consumer-provider model.

Previous research already suggested that AI- based treatment support systems (AI-TSS), which can be defined as any system used within the DPR to improve patient treatment, can potentially increase trust in the DPR . Such systems include for example technologies that apply machine learning to evaluate X-ray images, enabling more precise diagnostics or wearables that allow patients to be constantly monitored . The usage of these AI-TSS can offer many benefits in healthcare, but it can also lead to unintended consequences (e.g., biases, discrimination, errors, or unexpected results) .Thus, ethical challenges need to be taken into consideration while researching, developing, and using AI-TSS . Guidelines are aimed at promoting responsible and ethical development, deployment, and use of AI technologies. Especially, AI-enabled systems in healthcare should incorporate ethical principles, since this field faces unique ethical challenges involving the well-being of individuals and entire societies, as well as sensitive personal data . Furthermore, once an AI-TSS is deployed, its use can also have both positive or negative effects on the relationship between healthcare professionals and patients . Thus, the problem of uncertainty on how to design and apply AI-TSS in healthcare to maintain or even improve trust in the DPR, rather than endanger it, arises.(12)

AI in oncology has evolved from classical machine learning models to advanced technologies, enhancing cancer understanding, diagnosis, and treatment. Early methods like support vector machines and random forests analyzed clinical data to inform treatment, but their effectiveness waned with increasing data complexity.

Many studies underscore the transformative impact of AI on diagnosis, treatment response prediction, and prognostication, indicating its increasingly integral role in clinical workflows and its potential to comprehensively reshape the landscape of oncological care. However, the understanding of how AI will influence the doctor-cancer patient relationship remains unclear, even though it is a cornerstone of effective cancer care.(13)

Cancer care is inherently complex and multifaceted, which involves both technical aspects with the need of a timely and accurate diagnosis and clinical practice guidelines-guided treatment decisions often involving long-term treatment and emotional support. The doctor-patient relationship in this context is critical, as it significantly impacts patient outcomes, satisfaction, and compliance with treatment.(13)

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no financial or personal relationships, which may have inappropriately influenced them in writing this paper. There are no direct or indirect financial interests or conflicts that exist, and all authors agree with the content of the manuscript, and there are no conflicts of interest between or among them.

Authors Declaration

This article is our original work. The submitted manuscripts contain original and authentic results, data, and their ideas, which were not published elsewhere. No material from other publications is reproduced in our article. All my coauthors should not submit the same manuscript in the same language simultaneously to more than one journal. The author of this paper has read and approved the final version submitted.

Availability of data and materials

All data and material are available when request.

Authors contribution

All my authors play a major role and real contribution to achieve this project. Tagwa participated in references searching and arrangements; Eikhlas participated in the manuscript plan, editing, and writing of the article.

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